

Date: February 28, 2014

To: Thomas J. Bonfield, City Manager
Through: W. Bowman Ferguson, Deputy City Manager
From: Donald F. Greeley, Director, Water Management
Subject: Water Reclamation Facilities Master Plans
Engineering Services Contract - Amendment #2

Executive Summary

On August 16, 2010 City Council awarded a professional engineering consulting services contract to Hazen and Sawyer, P.C. for the Water Reclamation Facilities (WRF) Master Plan Projects at the North Durham Water Reclamation Facility (NDWRF) and the South Durham Water Reclamation Facility (SDWRF). The scope of services included developing master plans for each WRF to achieve compliance with either the Falls Lake Rules (NDWRF) or Jordan Lake Rules (SDWRF). The scope also included energy management strategies; major facility management mapping; and design, permitting, and construction related services (CRS) for various improvements identified in the 2008 Optimization Study and the finalized WRF Master Plans.

The purpose of this amendment is to add engineering services for bidding and constructing the NDWRF Back-up Power System Upgrade project; modifying design of the recently-bid NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project; adding CRS for the recently-bid NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project; and crediting this contract for unused engineering services associated with cancelling modifications to the SDWRF Administration/Lab building.

Recommendation

The Department of Water Management recommends that the City Council:

1. Authorize the City Manager to execute a contract Amendment with Hazen and Sawyer, P.C. for engineering services for the Water Reclamation Facilities Master Plans Project in the total amount not to exceed \$714,828.00; and
2. Authorize the City Manager to negotiate change orders for the contract provided that the total project cost does not exceed \$3,540,729.00, which includes the revised total contract amount of \$3,432,630 plus remaining contingency.

Background

Durham's NDWRF and SDWRF discharge into two basins – the Neuse River Basin and the Cape Fear River Basin, respectively. Both basins have had nutrient reduction strategies imposed for several years; however rules adopted by the Environmental Management Commission (EMC) in recent years require even greater reductions than those imposed by the facilities' National Pollution Elimination Discharge System permits. The Falls Lake Rules were adopted in January 2011 and established milestone nutrient reductions for the NDWRF for 2016 (Stage 1) and 2036 (Stage 2). Similarly, the EMC adopted the Jordan Lake Rules in August 2009 requiring reductions in nitrogen and phosphorus discharge from the SDWRF

by 2016. The deadline for compliance with the Jordan Lake Rule requirements for WRF discharges was subsequently extended to 2018 by Session Law 2011-394 signed into law July 1, 2011.

In order to address and develop plans to meet the requirements of these rules, the Department of Water Management commissioned WRF Master Plans for the North and South Durham WRFs, with City Council awarding a professional engineering consulting services contract to Hazen and Sawyer, P.C. on August 16, 2010. The scope of services included developing master plans and energy management strategies for each WRF; providing major facility management mapping; and providing design, permitting, and construction related services for various improvements identified in the 2008 Optimization Study and projects recommended in the Master Plans that were finalized in 2012.

Amendment No. 1 of the contract added design and permitting services for projects developed as a result of master planning. Summarily, these projects included aeration basin and piping modifications at both WRFs; chemical storage and feed improvements at each WRF; demolition at the NDWRF; and a new sidestream treatment facility at the SDWRF. These projects are part of the recently-bid construction contract for the NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project.

Amendment No. 1 did not include construction related services for the additional design projects. Details for their scopes of work were developed once the designs were complete.

Issues/Analysis

Amendment No. 2 will provide the following:

- additional construction related services for the recently-bid NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project;
- bidding services for the NDWRF Back-up Power System Upgrade project (described below);
- additional design services for modifications to the recently-bid NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project; and
- a credit to the original contract for unused engineering services associated with cancelling modifications to the SDWRF Administration/Lab building.

Construction related services include construction administration (CA) and construction inspection (CI). The original contract estimated a 17 month construction time frame for its related design elements. The CI portion of the construction services was to have been performed by a single resident project representative. Since additional and more complex design elements like SCADA and the proprietary biological process (AnitaMOX) have been incorporated, the construction windows will be expanded to 24 months at SDWRF and 18 months at NDWRF. Due to the complexities of the projects and the locations of the WRFs (opposite sides of the service area) it is now necessary to use a separate resident project representative for each site.

The NDWRF Back-up Power System Upgrade project was originally planned to be bid with the NDWRF and SDWRF Chemical Systems and Nutrient Related Improvements project. However, negotiations with Duke Power resulted in design modifications which significantly delayed completion of the final design. Therefore, a separate bidding for this project is needed; staff anticipates that the Power System Upgrade will be constructed during same time frame as the Chemical Systems and Nutrient Related Improvements project at NDWRF.

Additional design services are necessary to modify the NDWRF Back-up Power System upgrades and

to prepare the Supervisory Control and Data Acquisition (SCADA) upgrade bid documents for both WRFs.

In 2013, the DWM elected not to proceed with construction of the SDWRF Admin/Lab Building Modifications. The Engineer had completed bidding services but not the construction related services for this portion of the work; therefore, the City will receive a credit of \$45,124.

The DWM negotiated fees for the additional services as summarized below.

	Evaluation/Design	Construction Admin	Construction Inspection	Total
Amendment 2 Elements:				
Additional Construction Related Services	NA	\$90,820	\$464,881	\$555,701
NDWRF Back-up Power System Upgrades	\$48,701	\$20,490	NA	\$69,191
SCADA System Upgrades	\$45,660	\$89,400	NA	\$135,060
Credit - SD Admin Building	NA	(\$45,124)	NA	(\$45,124)
Subtotal Amendment No. 2	\$94,361	\$155,586	\$464,881	\$714,828
Current Contract Amount (Original + Amendment 1)				\$2,708,982
Current Council Authorized Contingency				\$116,919
Total Amended Contract Amount Plus Contingency				\$3,540,729

Alternatives

An alternative would be to reduce the proposed CA/CI services and proceed with construction using DWM staff. Currently staff does not have the availability or sufficient plant inspection experience. This may result in improper construction, construction delays, and possibly not meeting the performance requirements of the constructed systems. Also, if construction and inspection are not completed in a timely fashion, the City's compliance with the Falls Lake and Jordan Lake rules could be compromised/jeopardized, resulting in violations and fines assessed by the State.

Financial Impacts

Funding for this amendment is available in the Wastewater Process Rehabilitation Project which is part of the City's Capital Improvement Program. The funds are currently available in the project accounts:

Capital Project	Account Code	Amount
Wastewater Process Rehabilitation	4100P767-731003-P251C	\$714,828.00

SDBE SUMMARY

This is a contract amendment. Hazen and Sawyer, PC will be using the following SDBE firm for the additional scope of services:

Firm	ID	City/State	Amount	% of Contract
BREE & Associates, Inc.	MSDBE	Durham, NC	\$199,062	27.4%

